

Mariana Lanzarini-Lopes

Department of Civil and Environmental Engineering, University of Massachusetts Amherst

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EDUCATION

- Ph.D. (2020)** **Civil and Environmental Engineering**, Arizona State University, Arizona
Dissertation: Side Emitting Optical Fibers Enables Water Purification by Bioremediation, Oxidation and Disinfection.
- M.S. (2017)** **Civil and Environmental Engineering**, Arizona State University, Arizona
Thesis: Technoeconomic analysis of thermochemical energy storage
- B.S. (2015)** **Chemical Engineering**, University of Dayton, Ohio
Minor in Sustainability, Energy, and the Environment

PROFESSIONAL EXPERIENCE

- 2021 -** Assistant Professor, Department of Civil and Environmental Engineering
 University of Massachusetts Amherst
- 2020** Postdoctoral Researcher
 University of Colorado Boulder
- 2015-2020** Graduate Research Associate, Department of Civil and Environmental Engineering
 Arizona State University
- 2017** Senior Summer Scholar
 Lawrence Livermore National Laboratory, California
- 2015-2017** NSF Interdisciplinary Graduate Education and Research Traineeship Fellow
 Arizona State University
- 2011-2015** Undergraduate Research Assistant, Department of Chemical Engineering
 University of Dayton, Ohio

INDUSTRY EXPERIENCE

- 2020 - Founder and CEO**, Optical Waters LLC, MA Scaling up optical technologies for water treatment and medical applications.
- 2013 Chemical Engineering Intern**, Lubrizol, OH Manufacturing process development and flow

INTERNATIONAL WORK

IGERT CIA= Interdisciplinary Graduate Education and Research Traineeship Competitive Innovation Award; ETHOS= Engineers in Humanitarian Opportunities of Service

- 2017 - Santa Cruz de Mompox, Bolivar, Colombia.** Evaluated social economic and geographic influence on water storage, treatment, and purchase. Initially funded by: NSF IGERT CIA.
- 2015 Patna, Bihar, India.** ETHOS. Designed and built ammonia-calcium chloride refrigerator for off grid cooling of medical supplies.
- 2014 Dominica, West Indies.** ETHOS. Improved efficiency and quality of coconut oil production
- 2012 Lubwe, Ulapula Province, Zambia.** Taught physics and assisted in local hospital with surgeries and personal care

ACADEMIC AND PROFESSIONAL TRAINING

- 2019 Embracing Conflict Leadership Workshop**, AZ. Leadership training in conflict resolution and research group management.
- 2018 Influence: The Business of Getting Things Done**, AZ. Leadership training on effective communication of ideas to influence decisions, and opinions.

- 2017** **Access ERC Capacity Building Workshop**, WA. Two-day workshop on recruiting and supporting individuals with disabilities in the laboratory setting
- 2017** **Advanced Oxidation Processes PhD Summer School**, Porto, Portugal. One week lecture series on advanced oxidation process.
- 2016** **Science outside the Lab**, Washington DC. Two-week workshop exploring the relationship between science, policy and societal outcomes
- 2015-2017** **NSF IGERT- Solar Utilization Network (SUN)**, AZ. Weekly training in solar utilization networks, solar global energy issues, and relationships between politics and technology.

TEACHING EXPERIENCE

- 2021-Pres** Instructor of Record: Physical Chemical Processes. Spring (6-9 students)
University of Massachusetts Amherst
- 2021- Pres** Instructor of Record: Thermodynamics. Fall (80-95 students)
University of Massachusetts Amherst
- 2019-2020** Instructor: General Biology: From Atoms to Cells (~32 students)
Arizona Department of Corrections
- 2018** Instructor of Record: Introduction to Engineering (26 students)
Arizona State University
- 2019** Guest Lecturer: Physical/Chemical Water Treatment (12 students)
Arizona State University
- 2019** Guest Lecturer: NanoEnvironmental Engineering for Teachers (5 students)
Arizona State University
- 2012** Guest Lecturer: Physics (~40 students)
Secondary School of Ulapula Province, Northern Zambia

STUDENT ADVISING

RET=Research experience for teachers; REU=Research experience for undergraduates;

IS=Undergraduate independent study; URA=Undergraduate research assistant

Graduate Student Advising

Richard Rogers	PhD	CEE, UMass Amherst	Current
Lohita Rajesh	PhD	CEE, UMass Amherst	Current
Muhammad Salman Mohsin	PhD	CEE, UMass Amherst	Current
Kuhu Choulhary	Masters	CEE, UMass Amherst	Current
Abrar Rayan	Masters	CEE, UMass Amherst	Current

Undergraduate Research Advising

Josh Fiorentino	IS	CEE, UMass Amherst	Current
Melisa Advic	IS/URA	CEE, UMass Amherst	Current

Postdoctoral Scholars

Katrina Fitzpatrick
Leila Alidokht

Additional Mentoring

Zhe Zhao	PhD	CEE, ASU	2019-2020
Brandon Cruz	URA	CEE, ASU	2018-2020
Michelle Landreville	RET	CEE, ASU	2019
Jose Carlos Ortiz Beltranena	REU	CEE, ASU	2018

PATENTS

UV-C Wavelength Radially Emitting Particle-Enabled Optical Fibers for Microbial Disinfection, M. Lanzarini-Lopes, P. Westerhoff, S. Garcia Segura, S. Shah Nawaz. U.S. Provisional Pat. Ser. No. M19-017P, filed October 1st, 2018.

FELLOWSHIPS, HONORS and AWARDS

- 2021 Social Equity Prize at Arizona State University Innovation Open
- 2020 Edson Innovation Award - Arizona Venture Devils Fall Competition
- 2020 Edson Innovation Award - Arizona Venture Devils Spring Competition
- 2020 1st Place oral presentation for International Ultraviolet Association
- 2019 1st Place Arizona Falling Walls Pitch Competition
- 2019 Thomas R. Camp Drinking Water Scholarship
- 2019 2nd place at NSF NEWT Pitch Perfect Competition
- 2019 2nd place presentation for International Ultraviolet Association conference, Sydney, Au
- 2019 Graduate Professional Student Association Travel Grant
- 2019 Academic Rewards for College Scientists
- 2018 Nanotechnology Enabled Water Treatment Center Student Travel Grant
- 2018 Academic Rewards for College Scientists
- 2017 1st place Lawrence Livermore National Laboratory summer scholar poster competition
- 2017 ASU Fulton Schools of Engineering Deans Fellowship
- 2015 NSF Interdisciplinary Graduate Education and Research Traineeship Fellowship
- 2015 2nd Place KEEN Sustainability Entrepreneurship Award, University of Dayton
- 2015 Honorable mention for Green Chemistry Development

MULTIMEDIA

- News article: State Press. Student entrepreneurs win over \$300,000 in ASU Innovation Open. March 15th, 2021. <https://www.statepress.com/article/2021/03/spbiztech-asu-innovation-open-21-winners>
- YouTube: Falling Walls, Germany, Berlin. *Breaking the Wall of Water Borne Diseases*. November 13th, 2019. <https://www.youtube.com/watch?v=ukwXZhRuk5k4>
- News article: ASUnow. *Competition Encourages Arizona Students to Bring Down Walls*. Oct. 6th, 2019. <https://asunow.asu.edu/20191006-solutions-competition-encourages-arizona-researchers-bring-downwalls>
- News article: Envirobites. *Shining a Light on Water Disinfection: LEDs aren't just a Television Upgrade*. September, 20th, 2019. <https://envirobites.org/2019/09/20/shining-a-light-on-waterdisinfection-leds-arent-just-a-television-upgrade/>
- Video entry for Association for Environmental Engineering and Science Professors (AEESP) 2018 Student Video Competition "The Value of Water" https://www.youtube.com/watch?v=gV_SnYUkuDM **Awarded 2nd place**
- News article: Livermore News Letter. *Summer scholar purifies water with fibers*. July 26th, 2017. <https://www.llnl.gov/news/summer-scholar-purifies-water-fibers>

LANGUAGE PROFICIENCY

- English – Fluent
- Portuguese – Fluent
- Spanish – Highly Proficient

SCIENTIFIC AND PROFESSIONAL SOCIETIES

Society of Hispanic Professional Engineers
American Water Works Association
American Chemical Society

AZ Water Association
International Ultraviolet Association

SERVICE AND LEADERSHIP

Professional

Member of the Biofilm Task Force – International Ultraviolet Association (2022-2023)

Organizing Committee. Association of Environmental Engineers and Science Professors (2022-2023)

Organizing Committee. International Ultraviolet Association Research Symposium. (2020-2022)

YP Events Organizing Committee. International Ultraviolet Association, Americas Conference. (2020)

Moderator for Falling Walls Lab Conference. (2020)

Head of Media Synthesis for UV COVID related events. International Ultraviolet Association (2020)

Judge for SILBERSALZ Science and Media Award (2020)

Reviewer for Water Science and Technology (2018 – Present)

Session Chair ENVR Category, American Chemical Society Fall Conference, Boston, MA. (2018)

Session theme: From Lab to Tap: Implications of Scaling up Nano-enabled Environmental.

University and Community

Member of Diversity Equity and Inclusion committee, CEE, UMass Amherst. 2021-Present

Seminar Coordinator for the Environmental Water Resource Engineering Seminar. Spring 2022

Founding Member of a mentorship and engineering education partnership program for women interested in Engineering. Mountain Pointe High School (MPHS), AZ. January 2017 – 2020

Student Leadership Committee, National Science Foundation Engineering for Research Center on Nanotechnology Enabled Water Treatment (NEWT). Outreach Chair 2018 / Vice President 2019

Panelist for *Tackling Wicked Problems (the impact of a graduate degree): How nanoparticle technology can advance water treatment around the world.* Tempe Arizona. ASU. March 22, 2018.

Lead and participated in yearly *Night of the Open door.* To teach community members and students about the interconnectivity between water and cities. Visually illustrated water disinfection through fluorescent oxidation. April 2017

Captain, Valley of The Sun Ultimate Frisbee organization. August 2016- 2020

Coached and Co-Captain of a local Ultimate Frisbee team in a league of 300+ members.

Board, Graduate Student for the Environment. August 2015- 2017

Organize activities for members to tour algae plant, and network.

Project Lead and Public Relations, Engineering Through Humanitarian Opportunities of Service (ETHOS). 2011-2015

Helped to organized and design domestic engineering projects and led international project.

President of Sunday Art Therapy -Dayton's homeless shelters. 2013-2015

Organized and facilitated 2-hour weekly art session at the men and women's homeless Shelters.

Mentor in the Program to Engage and Exchange Resources for Students. 2013-2015

Mentored first year students in class work, career and academic goals.

PUBLICATIONS

12. Gorman, B., **Lanzarini-Lopes, M.**, Johnson, N., Miller, J., Stechel, E. 'Techno-Economic Analysis of a Concentrating Solar Power Plant Using Redox-Active Metal Oxides as Heat Transfer Fluid and Storage Media', *Frontiers in Energy Research*, 9. **2021.**

11. Zhao, Z., **Lanzarini-Lopes, M.**, Westerhoff, E., Long, X., Rho, H., Bi, Y., Ling, L., Westerhoff, P. “Evanescent wave interaction with nanoparticles on optical fiber modulate side emission of germicidal ultraviolet light”, *Environmental Science: Nano*, **2021**, 8:2441
10. Falinski, M., Turley, R., Kidd, J., Lounsbury, A., **Lanzarini-Lopes, M.**, et al. Doing nano-enabled water treatment right: Sustainability considerations from design and research through development and implementation. *Environmental Science Nano*, **2020**. 7(11):3255-3278.
9. **Lanzarini-Lopes, M.**, Zhao, Z., Perreault, F., Garcia-Segura, S., Westerhoff, P., Germicidal glowsticks: Side-emitting optical fibers inhibit *Pseudomonas aeruginosa* and *Escherichia coli* on surfaces. *Water Research*, **2020**. 184 116-191.
8. Zhao, Z., Zhang, Z., **Lanzarini-Lopes, M.**, Sinha, S., Rho, H., Herckes, P., Westerhoff, P., Germicidal Ultraviolet Light Does Not Damage or Impede Performance of N95 Masks Upon Multiple Uses. *Environmental Science and Technology Letters*. **2020**. 7(8):600-605
7. **Lanzarini-Lopes, M.**, Cruz, B., Garcia-Segura, S., Alum, A., Abbaszadegan, M., Westerhoff, P. Nanoparticle and Transparent Polymer Coatings Enable UV-C Side-Emission Optical Fibers for Microbial Inactivation in Water. *Environmental Science and Technology*, **2019**. 53(18):10880-10887.
5. **Lanzarini-Lopes, M.**, Garcia-Segura, S., Hristovski, Simons, A. J., Messerly, M., K., Westerhoff, P. Particle-modified Polymeric Cladding on Glass Optical Fibers Enhances Radial Light Scattering. *Journal of Optical Society of America B. Optical Physics*. **2019**. 36(6):1623-1628.
4. Garcia-Segura, S., **Lanzarini-Lopes, M.**, Hristovski, K., Westerhoff, P. Electrocatalytic Reduction of nitrate: Fundamentals to Full-scale Water Treatment Applications. *Applied Catalysis B: Environmental*, **2018**. 236:546-568.
3. **Lanzarini-Lopes, M.**, Delgado, A.G., Guo, Y., Dahlen, P., Westerhoff, P. Optical Fiber-Mediated Photosynthesis for Enhanced Subsurface Oxygen Delivery, *Chemosphere*, **2018**. 195:742-748.
2. **Lanzarini-Lopes, M.**, Garcia-Segura, S., Hristovski, K., Westerhoff, P. Electrical Energy per Order and Current Efficiency for Electrochemical Oxidation of p-Chlorobenzoic Acid with Boron-Doped Diamond anode. *Chemosphere*, **2017** 188:304-311.
1. **Lanzarini Lopes, M.**, Stechel, E., Sandrolini, J., Johnson, N. Concentrating Solar Power Systems with Advanced Thermal Energy Storage for Emerging Markets. *Institute of Electrical and Electronics Engineers*, **2016**. pp. 444–450.

SELECTED PRESENTATIONS

Oral, Speaker Underlined

13. **Lanzarini-Lopes, M.** Mohsin, M. Minimum UV flux needed to prevent biofilm growth in point of use channels. Association for Environmental Engineering and Science Professors. June 30, 2022. St. Louis, MO, March 9th, 2021
12. **Lanzarini-Lopes, M.** Innovation in harvesting and delivering UV light. International Ultraviolet Association. Boulder, CO. May 24, 2022. *Invited Speaker*
11. **Lanzarini-Lopes, M.** Enhancing impact of engineering innovation through entrepreneurship. WP Carey School of Business, Arizona State University. Virtual March 9th, 2021
10. **Lanzarini-Lopes, M.** Enhancing quantum yield of reactions through light. UMass Amherst. Virtual April 4th, 2021
9. **Lanzarini-Lopes, M.** Lighting the way to sustainable water treatment technologies. University of Reno, Nevada. Virtual. March 31st, 2021
8. **Lanzarini-Lopes, M.**, Garcia-Segura, S., Westerhoff, P. Germicidal glowsticks prevent surface growth of *P. aeruginosa* and *E. coli*. IUVA. Orlando, Florida. March 6th-9th 2020.
7. **Lanzarini-Lopes, M.**, Garcia-Segura, S., Cruz, B., Westerhoff, P. Optical Fibers Enable Novel Reactors in Photo-Assisted Water Treatment. AWWA ACE. Denver, Colorado. August 19th-23th 2019.
6. **Lanzarini-Lopes, M.**, Garcia-Segura, S., Cruz, B., Westerhoff, P. Advancing Disinfection Technologies with UV-C radially emitting optical fibers. IUVA. Sydney, Australia. February 10th-13th 2019.

5. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Hristovski, K., Westerhoff, P. Nano-enabling optical fibers increases light scattering for ultraviolet disinfection. ACS. Boston, Ma. August 19th-24th 2018.
4. Garcia-Segura, S., **Lanzarini-Lopes, M.,** Hristovski, K., Westerhoff, P. Selective electrochemical reduction of nitrate. AWWA AZWater. Phoenix, AZ. May 2-4, 2018.
3. **Lanzarini Lopes, M.,** Stechel, E., Sandrolini, J., Johnson, N. Concentrating Solar Power Systems with Advanced Thermal Energy Storage for Emerging Markets. IEEE Global Humanitarian Technology Conference, Seattle, WA, October 13-15, 2016.
2. **Lanzarini Lopes M.,** Porro, G., Bennett, T. Alli, Z. Benefits of Engineering Through Humanitarian Opportunities of Service. University of Dayton Board of Trustees Annual Meeting. Dayton, OH, August 29th, 2014.
1. **Lanzarini-Lopes M.,** Porro, G., Bennett, T., Alli, Z. Improvements to Coconut Production Process and Oven Efficiencies. Portsmouth, Dominica. July 11th, 2014.

Selected Posters

9. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Westerhoff, P. Increased Inactivation Surface Area By LED And UV-C Side Emitting Optical Fibers. AEESP . May 14th-16th, 2019.
8. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Hristovski, K., Westerhoff, P. Optical fibers: Lighting the way for a new generation of water treatment technologies. NSF ERC NEWT IPBA annual meeting. New Haven, CT . October 2nd – 4th , 2018.
7. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Hristovski, K., Westerhoff, P. Selective oxidation of organics by boron doped diamond electrode . AWWA ACE, Las Vegas, NV. June 11-14, 2018.
6. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Hristovski, K., Westerhoff, P. Electrochemical Oxidation of Chlorinated Pollutant p-Chlorobenzoic Acid: Degradation Mechanisms, Kinetics and Mineralization Efficiency. PhD school for advanced oxidation Processes. Porto, Portugal. July 11th, 2017.
5. **Lanzarini-Lopes, M.,** Garcia-Segura, S., Hristovski, K., Westerhoff, P. Electrical energy per order and current efficiency for electrochemical oxidation of p-chlorobenzoic acid with boron-doped diamond anode. *International Society of Electrochemistry*. Providence, Rhode Island. August 23rd, 2017.
4. **Lopes, M.,** Delgado, A., Guo, Y., Westerhoff, P. Phototrophic Activity In A Subsurface Through Radially Emitting Fiber Optics Light Delivery. AZ Student Energy Conference, Flagstaff, AZ, September 14-16, 2016.
3. **Lopes, M.,** Stechel, E., Sandrolini, J., Johnson, N. Thermodynamic System analysis of High Performance Reduction/Oxidation Metal Oxides Thermochemical Energy Storage. AZ Interdisciplinary Graduate Education and Research Traineeship Solar Utilization Network. December 2, 2015.
2. **Lopes M.** Choi, J. Energy Intake and recycling of Cellular devices. University of Dayton Standard Symposium. Dayton, OH. April, 2015.
1. **Lopes M.,** Porro, G., Bennett, T. Alli, Z. Improvements to Coconut Production Process and Oven Efficiencies in Dominica. University of Dayton Standard Symposium. Dayton, OH. April, 2014